

REMARKS / ARGUMENTS

This amendment is filed concurrently with:

1. Transmittal Form and Fee Transmittal;
2. Petition for Extension of Time;
3. A Revocation of Power of Attorney or Authorization of Agent together with a Statement under 37 CFR 3.73(b) pursuant to which the undersigned has been appointed as the agent with respect to the continued prosecution of this application;
4. A Reissue Application: Consent of Assignee together with a Statement under 37 CFR 3.73(b);
5. A Reissue Application Declaration by the Assignee;
6. A Terminal Disclaimer to Obviate a Double Patenting Rejection Over a Prior Patent made in relation to U.S. Patent Nos. 5,783,083 and RE37,549 to be filed in place of the Terminal Disclaimer to be withdrawn;
7. A Terminal Disclaimer to Obviate a Provisional Double Patenting Rejection Over a Pending Second Application made in relation to U.S. Patent Nos. 09/621,234, 09/849,573, 10/167,699, 10/178,838; and,
8. An Information Disclosure Statement.

The Office Action rejected claims 1-30 under 35 U.S.C. 251 as being broadened by the deletion of "a first header and a second header disposed in transversely spaced-apart relationship with said second header within said substrate" from the original claims of U.S. Patent No. 5,639,373 and presented in new claims 23-30. Claims 23, 25, 26 and 29 have been amended to include the aforementioned phrase. Claims 25, 27, 28 and 30 include this phrase by their dependency on other claims. Claims 1-22 are unchanged from original U.S. Patent No. 5,639,373 and so this rejection does not apply to them. The applicants submit that the objection under 35 U.S.C. 251 has been satisfied.

The Office Action also objected to Claims 23, 25-26 and 29 because the recitation of "said permeate collection meas" needed to be corrected to read "said permeate collection means". The appropriate corrections to these typographical errors have been made.

Regarding item 2 of the Office Action, the Applicants wish to inform the Examiner of four pending applications related to the present application. These are: Serial No. 09/621,234, which is a re-issue application relating to U.S. Patent No. 5,783,083 which

is a CIP of U.S. 5,639,373; and Serial Nos. 10/167,699, 10/178,838 and 09/849,573 which are all continuations in the family of U.S. 5,639,373. The Applicants are concurrently filing a terminal disclaimer in relation to three of these applications. The Applicants are also concurrently filing a Terminal Disclaimer in relation to issued U.S. patent Nos. 5,783,083 and RE37,549. The Applicants are further concurrently filing a supplemental Information Disclosure Statement.

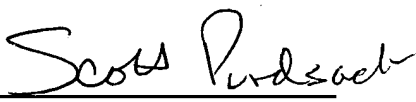
The Office Action also notes various defects in the previous Consent of Assignee and Reissue Oath/Declaration. The Applicants are concurrently filing fresh documents and submit that these fresh documents satisfy the objections raised in the Office Action. Regarding the last point of paragraph 3 of the Office Action, the Applicants do not believe that the fresh reissue declaration is required to be notarized. If this is incorrect, the Applicants request that the Examiner advise us of the relevant section of the patent statute or rules.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Applicants submit that the application is now in condition for allowance.

Respectfully submitted,

Mailvaganam Mahendran et al.

By 
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

24. In a microfiltration membrane device, for withdrawing permeate essentially continuously from a multi-component liquid substrate while increasing the concentration of particulate material therein, said membrane device including:

a multiplicity of hollow fiber membranes, or fibers, unconfined in a shell of a module, said fibers together having a surface area $> 1 \text{ m}^2$, said fibers being swayable in said substrate, said fibers being subject to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi), and each fiber having length > 0.5 meter;

a first header and a second header disposed in transversely spaced-apart relationship with said second header within said substrate;

a first header and a second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers extending from a permeate-discharging face of at least one header;

permeate-collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of each of said headers; and,

means to withdraw said permeate;

the improvement comprising,

said fibers, said headers and said permeate collection means together forming a vertical skein wherein said fibers are essentially vertically disposed and terminal end portions of individual fibers are potted in proximately spaced-apart relationship in cured resin;

said first header being upper and disposed in vertically spaced-apart relationship above said second header, with opposed faces at a fixed distance;

each of said fibers having substantially the same length, said length being from between 0.1% to less than 5% greater than said fixed distance so as to permit restricted

displacement of an intermediate portion of each fiber, independently of the movement of another fiber; and,

a gas distribution system having through-passages adapted to discharge bubbles near to rise through or around the skein of fibers, the gas distribution system including one or more gas tubes which space the first and second headers apart and which also carry air to the through-passages.

25. In a microfiltration membrane device, for withdrawing permeate essentially continuously from a multi-component liquid substrate while increasing the concentration of particulate material therein, said membrane device including:

a multiplicity of hollow fiber membranes, or fibers, unconfined in a shell of a module, said fibers together having a surface area $> 1 \text{ m}^2$, said fibers being swayable in said substrate, said fibers being subject to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi), and each fiber having length > 0.5 meter;

a first header and a second header disposed in transversely spaced-apart relationship with said second header within said substrate;

a first header and a second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers extending from a permeate-discharging face of at least one header;

permeate-collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of each of said headers; and,

means to withdraw said permeate;

the improvement comprising,

said fibers, said headers and said permeate collection means together forming a vertical skein wherein said fibers are essentially vertically disposed and terminal end portions of individual fibers are potted in proximately spaced-apart relationship in cured resin;

said first header being upper and disposed in vertically spaced-apart relationship above said second header, with opposed faces at a fixed distance;

each of said fibers having substantially the same length, said length being from between 0.1% to less than 5% greater than said fixed distance so as to permit restricted

displacement of an intermediate portion of each fiber, independently of the movement of another fiber, wherein the headers are rectangular in plan view and the skein has about 30 or less arrays of fibers.

26. A device for withdrawing permeate from a multicomponent liquid substrate comprising,

(a) a reservoir under essentially ambient pressure having a feed zone for containing a substrate;

(b) a microfiltration membrane device, for withdrawing permeate essentially continuously from the multi-component liquid substrate while increasing the concentration of particulate material therein, said membrane device including:

a multiplicity of hollow fiber membranes, or fibers, unconfined in a shell of a module, said fibers together having a surface area $> 1 \text{ m}^2$, said fibers being swayable in said substrate, said fibers being subject to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi), and each fiber having length > 0.5 meter;

a first header and a second header disposed in transversely spaced-apart relationship with said second header within said substrate;

a first header and a second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers extending from a permeate-discharging face of at least one header;

permeate-collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of each of said headers; and,

means to withdraw said permeate;

said fibers, said headers and said permeate collection means together forming a vertical skein wherein said fibers are essentially vertically disposed and terminal end portions of individual fibers are potted in proximately spaced-apart relationship in cured resin;

said first header being upper and disposed in vertically spaced-apart relationship above said second header, with opposed faces at a fixed distance;

each of said fibers having substantially the same length, said length being from between 0.1% to less than 5% greater than said fixed distance so as to permit restricted

displacement of an intermediate portion of each fiber, independently of the movement of another fiber,

the outside of the membranes in fluid communication with the feed zone of the reservoir;

(c) a pump in fluid communication with the insides of the membranes through the permeate collection means, the pump operable to supply a suction to the lumens of the hollow fiber membranes to draw permeate through the membranes; and,

(d) a gas distribution means including a plurality of through-passages for discharging bubbles which rise and contact fibers.

29. In a microfiltration membrane device, for withdrawing permeate essentially continuously from a multi-component liquid substrate while increasing the concentration of particulate material therein, said membrane device including:

a multiplicity of hollow fiber membranes, or fibers, unconfined in a shell of a module, said fibers together having a surface area $>1 \text{ m}^2$, said fibers being swayable in said substrate, said fibers being subject to a transmembrane pressure differential in the range from about 0.7 kPa (0.1 psi) to about 345 kPa (50 psi), and each fiber having length > 0.5 meter;

a first header and a second header disposed in transversely spaced-apart relationship with said second header within said substrate;

a first header and a second header having opposed terminal end portions of each fiber sealingly secured therein, all open ends of said fibers extending from a permeate-discharging face of at least one header;

permeate-collection means to collect said permeate, sealingly connected in open fluid communication with a permeate-discharging face of each of said headers; and,

means to withdraw the permeate;

the improvement comprising,

said fibers, said headers and said permeate collection means together forming a vertical skein wherein said fibers are essentially vertically disposed and terminal end portions of individual fibers are potted in proximately spaced-apart relationship in cured resin;

said first header being upper and disposed in vertically spaced-apart relationship above said second header, with opposed faces at a fixed distance:

each of said fibers having substantially the same length, said length being from between 0.1% to less than 5% greater than said fixed distance so as to permit restricted displacement of an intermediate portion of each fiber, independently of the movement of another fiber;

walls extending downwards from a lower header of the first and second header, the walls being adapted to retain a gas below the lower header; and,

through-passages for gas to pass through the lower header from an area below the lower header bordered by the walls.

Please charge any deficiency or credit any overpayment to our deposit account No. 02-2095. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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/jw
Encl.